COMMUNICATION SYSTEM TRACKING ARRANGEMENT

BACKGROUND OF THE INVENTION

This invention relates to communication system call tracking control arrangements and more particularly to an arrangement for controlling the tracking feature in a stored program controlled communication system.

In communication systems where the users share a community of interest, as for example in a business communication system, it often happens that a call is placed to a station where the user is busy with another communication call. In some systems it is possible that the second call will result in ringing, or other signalling devices, becoming activated at the called station requiring the called party to take some action even though that party is involved in another call. Thus a need exists for an arrangement which allows a calling party to become immediately connected to a busy station as soon as the busy station becomes idle without priorly disturbing the busy station.

However, even in situations where the subsequent call is not completed and busy tone is returned, problems exist. Primarily these problems concern the continued attempts on the part of the calling party to place a call to the called busy station or to a called line pool. Much time is wasted by redialing the connection only to find the called station, or line pool, again busy. Some systems have been designed whereby the number of the last dialed call is stored in a memory and periodically retried. However, it often happens that when the originally called party becomes free the original calling party is then busy. Further problems exist in such systems since the calling party must remain close to the calling station so as to be available when the connection is finally established to the called station.

Thus, a need exists in the art for a feature which allows any station in a communication system to determine the busy-idle status of a selected other station served by the same system independent of a communication path to that other station.

There is a further need in the art for such a system of tracking the busy-idle status of selected stations and for receiving a signalling indication when the tracked party goes from the off-hook to the on-hook condition. There is a further need for such a system which operates to establish a communication connection to the tracked station jointly upon receiving such an off-hook to on-hook transition and upon the tracking station going off-hook.

There is also a need for a call tracking arrangement which provides both a visual status and audible determination when a tracked line pool becomes idle and available for use. There is also a need in the art for an arrangement which allows a called station which is in the "don't answer mode" to receive incoming calls immediately upon leaving that mode simply by making an on-hook to off-hook transition.

SUMMARY OF THE INVENTION

One of the buttons on the telephone set is designated as a tracking button and is used, under control of that station to track the busy-idle status of a target station. A lamp associated with the tracking button provides a visual indication of the busy-idle status of the selected target station. When the target station goes on-hook following an off-hook condition the tracking station, by operating the tracking button and going off-hook establishes a call to the target station.

In operation the tracking subscriber operates an intercom or other special button and dials a "prepare to program" digit such as the #. The tracking subscriber then pulses the number of the target station or line pool into the system by means of the key pad on the telephone instrument. The lamp associated with the tracking button will provide the tracking subscriber with the communication status of the target station without interference or connection with the communication path of the target station. When the tracked station makes an off-hook to on-hook transition, an audible as well as visual indication is provided to the tracking station to alert the user to the changed status. By operating the tracking button at the tracking station a communication path is established from the tracking station to the target station without further dialing.

When a line pool is being tracked and one of the lines in the line pool becomes idle a visual indication is provided to the calling station and an alerting signal is provided. This alerting signal is provided each time a line in the line pool becomes idle so that a calling subscriber need not immediately attempt to seize the idle line but may do so at his convenience at a later time. This is possible since the busy-idle status of the line pool will be continuously displayed whenever the line pool has an idle line available.

The calling subscriber by using prime line preference on the tracking button or by preselecting the track button may, upon hearing the alert signal, simply lift the receiver and a connection will be immediately placed to the tracked station or to an available one of the lines in the tracked line pool.

Thus, utilizing the tracking feature as discussed above, it is possible that when a person who has been absent from his telephone station for a period of time returns to his office the telephone receiver may be lifted and replaced (making an on-hook to off-hook to on-hook transition) thereby automatically alerting all those callers who have been tracking the status of the unattended telephone.

A further advantage of such a tracking arrangement is that it is possible to immediately call a party who has been busy on the telephone with a minimum of effort on the part of the calling party since the calling party need not continually try to dial the called station. Under such an arrangement it is possible to reduce the number of line pools necessary for a given installation since customers need not continue dialing but are content to wait for an idle line knowing that as soon as such a line is available they will be automatically notified.

BRIEF DESCRIPTION OF THE DRAWINGS

The foregoing features and objectives together with the operation and utilization of the present invention will be more apparent from the following description, taken in conjunction with the drawing, in which:

FIG. **1** shows an overall system configuration having several multibutton telephone stations;

FIG. **2** shows a pictorial representation of a multibutton telephone station set,

FIGS. **3**, **4**, **5** and **6** show typical flow charts of the claimed feature operation.